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MEMO

TO: John Munn, California Department of Forestry
FROM: Alan Franklin Alan Franklin
RE: SYP 96-002

Enclosed are my comments that I submitted to the U.S. Fish and Wildlife Service concerning the proposed Pacific Lumber Company Habitat Conservation Plan. I recently heard that I needed to submit these to the California Department of Forestry as well.

COMMENTS ON THE PROPOSED NORTHERN SPOTTED OWL CONSERVATION PLAN OF THE PACIFIC LUMBER COMPANY SUSTAINED YIELD PLAN/HABITAT CONSERVATION PLAN

(Public Review Draft - July 1998; Permit Numbers PRT-828950 & 1157)

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In reviewing the July 1998 Public Review Draft of the Pacific Lumber Company Sustained Yield Plan/Habitat Conservation Plan (HCP), I restricted my comments to the Northern Spotted Owl Conservation Plan contained within that document. I have conducted research on northern spotted owls on public lands in northern California since 1983 through Humboldt State University. I have also been involved in a number of conservation planning efforts for northern spotted owls. Thus, I am reasonably familiar with both the available scientific information concerning northern spotted owls in northern California and past and present conservation strategies for this species at regional and local scales.

I have divided my comments here into three major categories: *Specific Comments* where I made comments concerning details of the proposed plan, *Conclusions* where I attempted to summarize my specific comments, and *Recommendations* where I proposed some potential alternative strategies to those in the HCP. In summary, I found the proposed Northern Spotted Owl Conservation Plan in the Pacific Lumber Company HCP to be inadequate for a number of reasons. These reasons include: 1) inadequate use of existing scientific information in formulating the Conservation Plan, 2) inadequate mitigation measures, and 3) the lack of a scientifically defensible monitoring strategy. After reviewing the Conservation Plan, I feel that it should be modified substantially before it can be considered an acceptable management strategy. My rationales for these findings are outlined in detail below.

SPECIFIC COMMENTS

INTRODUCTION AND SUMMARY (VOLUME IV, SECTION A):

At the outset, the plan claims that it "reflects the significant scientific data made available concerning the habitat and biology of the NSO since it's listing". Although a number of recent documents concerning northern spotted owls were cited, the results from these studies were not incorporated into the plan itself. In other words, scientific data were acknowledged but, as far as I could tell, never utilized in developing a meaningful management plan for northern spotted

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owls on PALCO lands. I think this point is supported by my comments on the remaining sections of Volume IV of the PALCO HCP (see below). AF-1

The HCP also claims to be based on a "habitat-based approach which seeks to conserve viable populations of the NSO by insuring that the habitat requirements of the NSO are present throughout the life of the plan". In reviewing this HCP, it is important to consider what *habitat* is. Morrison et al. (1998) define habitat as an *area with a combination of resources and environmental conditions that promotes occupancy by individuals of a given species and allows those individuals to survive and reproduce.* Thus, habitat is not restricted to a single vegetation type, such as old-growth coniferous forest, but can consist of a combination of vegetation types at different scales. This point should be kept in mind when considering my comments on northern spotted owl habitat in the following sections. AF-2

NATURAL HISTORY (VOLUME IV, SECTION B):

A number of key elements, relevant to the development of a conservation strategy, are missing from the discussion of the natural history of northern spotted owls. First, the importance of edge between early and late-seral stage coniferous forest to reproduction was not discussed. A number of authors have discussed the importance of ecotones between early and late-seral stages for northern spotted owl foraging and reproduction in California; for example, Folliard (1993) and Thome et al. (1998) on private timberlands and Ward et al. (1998), Zabel et al. (1995), and Franklin (1997) on public lands. Thus, habitat (as defined in the preceding section) probably cannot be discretely classified as foraging and nesting as was done in the PALCO HCP for several reasons. First, foraging/nesting habitat is represented by the juxtaposition and inter-relationship of early- and late-seral stage vegetation. In other words, spotted owl habitat is some mixture of early- and late-seral stage vegetation. To view early seral-stage forest, as foraging habitat, separately from late-seral stage forest, as nesting habitat, misses the concept that it is the ecotone between these two vegetation types that may be important for reproductive success of nesting spotted owls. Second, the potential importance of interior, older forest was ignored. Franklin (1997) suggested that high fitness sites for northern spotted owls contained interior, older forest that promoted high survival in addition to ecotones between these forests and other vegetation types which promoted high fecundity. Thus, there may be a trade-off between maintaining older forest and early successional stages for promoting high fitness in northern spotted owls. However, this relationship suggests that older and younger forests cannot be considered separately but must be considered together in some landscape configuration at the site or territory scale. AF-3 AF-4

BASELINE CONDITION (VOLUME IV, SECTION C):

In the first paragraph, the plan states that every known nest site and activity center for northern spotted owls has been protected from timber harvest under the protections of the Endangered Species Act and the California Forestry Practice Rules. However, no information is presented to document the extent of this protection. This would be useful information to assess whether future protection under the HCP will be better or worse than past protection measures. AF-5

A major frustration I found with this section of the HCP was the lack of synthesis of data that had been collected on PALCO lands and other studies in northern California. A good deal of this section describes the various research projects conducted on PALCO lands but this section contained very little synthesis and application of that research data toward management of northern spotted owls. For example, there is discussion about radio-telemetry work and color-banding work yet there is no discussion or synthesis of the data (other than probable home range sizes) in terms of habitat use, effects of timber harvest on site and mate fidelity, etc. AF-6

The greatest weakness in this section was in terms of defining spotted owl habitat. The crosswalk between WHR types to spotted owl nesting, roosting, and foraging habitat in Table 6 lacked any rationales for why certain WHR types were classified as spotted owl habitat. Whereas some of the crosswalk seemed reasonable, I found some of it questionable. Without some clarifications or rationales for the choices, I could not determine why certain WHR types were classified as they were. As I stated previously, the designation of WHR types as foraging habitat is probably inappropriate given existing scientific information about northern spotted owls in northern California. The amount of early-seral stage types does not by itself constitute foraging habitat; it is the ecotone between these types and later-seral stage forest that may be important for foraging in northern spotted owls in California. AF-7

MINIMIZATION AND MITIGATION MEASURES (VOLUME IV, SECTION D):

The plan concentrates almost exclusively on nest sites and amounts of habitat related to nest sites. I found this to be an overly simplistic approach to maintaining populations of northern spotted owls on PALCO lands. The statement in the first paragraph that all known active nest sites will be protected for the first five years of the plan, at first, seems generous. However, after reading the *Protection of Activity Centers* section, I realized the term "active" was the operative word. As far as I could tell, once a nest becomes inactive for a year, then it is no longer afforded protection. Thus, for a nest to be protected over the first 5 years of the plan it would need to be active each year (this is inconsistent with northern spotted owl biology as I discuss in more detail in my comments on the *Protection of Activity Centers* section later in this document). AF-8

In the second paragraph of this section, the plan states that at least 10% of the forested landscape will be maintained as northern spotted owl nesting habitat. Based on Table 3 (page 12, Vol. IV) and tables in vol III, PALCO lands contain 161,156 acres of what they consider to be northern spotted owl nesting habitat (low, medium, and high qualities combined). The current amount of what PALCO considers spotted owl nesting habitat constitutes 76.1% of the forested landscape in the plan area (211,700 acres). At a 10% level, the amount of nesting habitat would be reduced to 21,170 acres, a reduction by 139,986 acres (a 66.1% reduction of the forested landscape). Such a dramatic reduction seems inconsistent with previous statements in the plan concerning insurance of habitat requirements being present through the life of the plan and minimization and mitigation of take. This potential reduction of nesting habitat is of concern because 1) often management is done at minimum stated levels (e.g., if a plan states that a minimum of 10% will be maintained then usually management is done as close to the minimum as possible), and 2) the projected acres in Table 3 do not appear to be mandated; they are just projected acres with no statement that amounts *will* be managed at these levels. In addition, the AF-9

projected NSO habitat in the plan area calls for a 46% reduction in high quality nesting habitat and an 82% reduction in medium quality nesting habitat in the first 20 years. This suggests that "take" based on removal of habitat components will probably be much higher than the plan states. What PALCO defines as high and medium quality habitat also includes those components (e.g., interior older forest) that appear to promote higher survival in northern spotted owls (see Franklin 1997). In my opinion, PALCO risks decreasing survival rates for a large number of northern spotted owls in areas where high and medium quality nesting habitat will be considerably reduced. AF-9

Out of the 147 northern spotted owl sites currently existing on PALCO land, only a maximum of 16 sites in the marbled murrelet Conservation Areas and two sites in Headwaters Forest[1] will be preserved. These 18 sites are 12% of the known sites which suggest that 88% of the sites will be managed through the rest of the plan. Thus, the bulk of the northern spotted owl sites on PALCO lands will be subject to the problems I have discussed above. AF-10

I believe riparian protection zones will contribute little to northern spotted owl habitat in the long run. First, the riparian protection zones have no core or interior forest habitat (that part of the forest that is at least 100 m from an edge) that has been positively associated with survival of northern spotted owls (Franklin 1997). Second, I question as to whether these zones would be more susceptible to disturbances, such as windthrow, that would affect their ability to maintain the appropriate structural characteristics for northern spotted owls. Third, the acreage (27,951 acres) of these proposed riparian protection zones is suspiciously similar to the acreage (21,170 acres) of the 10% minimum of forested landscape to be maintained. In a worst case, the riparian protection zones would be substituted as the requirement for spotted owl nesting habitat. I assumed this was the case because the plan did not state that riparian protection zones would be in addition to other areas. If this is the case, I would seriously question whether long, thin corridors of "nesting" habitat would suffice given the potential problems outlined above. AF-11

I had the same concerns with the reliance solely on the amounts of foraging habitat in this section of the plan that I had expressed in my previous comments on the *Natural History* section. Again, my concerns here are that the amount of early-stage forests means little in terms of owl foraging habitat unless it is placed in the context of adjacent older forest. For example, only a small portion of a 1000-acre block of early seral stage forest surrounded by older forest would be considered a component of foraging habitat based on the existing scientific evidence discussed above. AF-12

The plan claims that at the end of the plan period (50-60 years from now), between about 178,865 and 185,877 acres of spotted owl nesting habitat will be extant. However, about 65% of the projected nesting habitat (Table 3, Volume IV) at that point will be what the plan refers to as Low Quality nesting habitat (habitat marginal for species occurrence supporting relatively low population densities at low frequencies). Thus, it is difficult to believe the proposed assumption that northern spotted owl pairs will be proportional to nesting habitat (to what degree they are proportional is never stated). Finally, the plan states that "this strategy should provide for a AF-13 AF-14

[1] based on location of two sites in Headwaters forest on Map 27; it was never specified in the plan how many sites occurred in Headwaters Forest.

"floor" of at least 100 sites occupied by pairs at all times". I could find no evidence anywhere in the HCP document that supported this statement. AF-14

Habitat Retention - The reiteration of the statement here that at least 10% of the forested landscape will be suitable nesting habitat for northern spotted owls reinforces my suspicion that the plan will manage for only the 10% minimum amount. There are no further statements here about projected nesting habitat. This point needs to be clarified before the HCP is accepted. Specifically, the question of "how much nesting habitat will be maintained" needs to be explicitly stated as a guideline of the plan. If the guideline is at least 10%, then I would consider this unacceptable for maintaining northern spotted owls on PALCO lands without some scientific justification. AF-15

Protection of Activity Centers - My interpretation of this section is that only 18 acres within a 0.5 mile radius will be protected around known nest and roost sites (defined as activity centers) during the first five years of the plan. In addition, only one 18 acre patch will be protected per site. The way I interpreted the guidelines for protection of activity centers is with the help of the following scenarios:

1. In year 1, a nest site is discovered for pair A. A 1000'-radius protection zone is established around the nest site for the duration of the breeding season, in accordance with section 3.1.a (page 20, vol. IV). After the breeding season (defined as 31 August in section 3.1.a), this protection area is reduced to 18 acres (section 3.2.e on page 20, vol. IV). Thus, the area protected around the nest site for pair A can be reduced to 18 acres in year 1 at the end of the breeding season.

2. In year 2, a second nest site for pair A is discovered within 0.5 miles of the first nest site. This second nest site is also afforded the 1000'-radius protection zone during the breeding season but can be reduced to 18 acres under the first scenario described above. In addition, the area around the first nest site is now available to be harvested under sections 3.2.a and 3.2.c (page 20, vol. IV). If pair A had not nested in year 2 (a common occurrence) then only 18 acres would be protected around this new activity center, regardless of whether it was the breeding season or not (section 3.1.b on page 20, vol. IV) and the area around the nest site from year 1 would be available for harvest under sections 3.2.a and 3.2.c (page 20, vol. IV). AF-16

3. In year 1, pair B with two fledged young are found in July in an area where timber harvest was scheduled for August. No nest had been found because surveys for spotted owls did not begin until July in accordance with section 2.2 (page 20, vol. IV). Because no nest tree was found, it appears that only 18 acres is protected around the area where the pair and juveniles were found. There is some ambiguity here because section 3.1.a states that no harvesting will occur during the breeding season within a 1000' radius of the *nest tree* (emphasis mine) yet

section 3.1.b states that only 18 acres will be protected around a non-nesting pair or single owl. Clearly, the owls nested in this scenario to have produced young. However, they were not nesting at the time of detection so they could be classified as non-nesting. In addition, there is no nest tree. Regardless, only 18 acres would be ultimately protected around this site even if the temporary protection of the 1000'-radius is applied during the duration of the breeding season.

4. In year 2, pair B is found roosting during the nesting period and exhibit no indications of nesting. According to section 3.1.b (page 20, vol. IV), only 18 acres is protected around the roost site regardless of whether it is the breeding season or not. In addition, the area where pair B was found with the two young in year 1 is now available for timber harvest, regardless of the fact that they had produced young in that area and not in the area where they were found in year 2.

The bottom line here appears to be that long-term protection for northern owl sites will be a single 18 acre area around the most recent activity center within a 0.5 mile radius circle. There were two additional points of confusion in protection of spotted owls under the *Protection of Activity Centers* section. First, the composition of the 18 acres to be protected is never explicitly described in the plan as to whether it will contain nesting, roosting, foraging owl habitat, or even non-habitat. For example, a pair nesting near the edge of a forested patch could have adjacent "non-habitat' (however that is defined) included in the 18 acres. Second, no priorities are given as to whether an activity center is a nest site, a roost site for a pair with young, a roost site for a non-reproductively active pair, or a roost site for a single individual in establishing long-term (>1 year) protection for activity centers within a 0.5 mile radius. As far as I could tell, only one activity center per owl site (defined by a 0.5 mile radius) will be maintained regardless of the reproductive activity that was represented by that or previous sites. Thus, in the worst case scenario, each spotted owl site will contain 18 acres of some unspecified vegetation type around an activity center that may or may not be a nest tree. I am concerned here that this will lead to a general decline in nest sites and forests supporting nesting structures on PALCO lands. In turn, this decline in suitable nesting areas could lead to a decline in the reproductive potential of the northern spotted owl population on PALCO lands.

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The HCP states that "impacts of taking will be minimized ... by protecting all known active nest sites for the first five years of the plan" (para. 1 of Section F., Volume IV). At first, this statement seems contrary to the guidelines for Protection of Activity Center. However, the term "active" is open to considerable interpretation. If a nest is used in one year but not the next then one could interpret the nest as no longer being active and, thus, no longer in need of protection. If "active" is interpreted in this manner, then previously used nests within a site would no longer be protected. This interpretation would ignore the fact that northern spotted owls are sporadic breeders (Forsman et al. 1984). In addition, they often switch nests between years but may use old nests in subsequent years (Forsman et al. 1984:32). For example, they may use nest A in one year, then use nest B, and maybe nest C in subsequent years, and then return to use nest A again. If nests are ephemeral structures, such as debris clumps, then this is less of a problem. However, if they are more stable structures, such as broken-top trees or

cavities in trees, then protection of these structures become more important because they require long periods of time to develop. These points further support my concern that the proposed mitigation measures may negatively impact the reproductive potential of the northern spotted owl population on PALCO lands.

I found no biological justification (and none was provided in the plan) for the use of the long-term 18-acre protection zone around activity centers. Research conducted on nearby Simpson Timber Company timberlands suggests that, in fact, protection zones around activity centers should be considerably larger. Folliard (1993) concluded that 247 acres (100 ha) of forest ≥45 years within a 2625 foot (0.8 km) radius of nest sites should be adequate to provide suitable habitat for nesting on Simpson Timber Company lands. Thome et al. (1998) recommended that clearcuts should be restricted to at least 3600 feet (1.1 km) beyond nests. Both of these recommendations were long-term strategies and were not short-term seasonal restrictions, such as the 1000' radius zones proposed by the PALCO HCP.

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Monitoring - In terms of northern spotted owls, the HCP should be considered unacceptable because of the lack of a well-designed, statistically-valid monitoring plan. In the HCP, monitoring is dealt with as an afterthought and not as an integral part of the conservation plan for northern spotted owls. Success of the HCP is predicated on the effects of the plan on species, such as the northern spotted owl. Therefore, monitoring must be an integral part of the conservation strategy and should be available for review prior to acceptance of the HCP. Otherwise, a monitoring plan could be developed after acceptance of the HCP which leads to faulty or misleading conclusions. For example, samples must be representative of ongoing activities, such as timber harvesting. If timber harvesting is avoided in areas where monitoring is taking place, then trends in northern spotted owl populations on PALCO lands might appear stationary when in fact they are declining in areas where extensive timber harvesting is occurring. In addition, monitoring criteria must include statistical criteria to be valid. For example, the plan proposes to use a baseline against which estimates will be compared. For meaningful statistical comparisons, concepts such as Type I and Type II error rates must be incorporated into the monitoring criteria.

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POTENTIAL IMPACTS OF THE TAKING (VOLUME IV, SECTION G):

The first statement of this section is justified to a point. However, a key question is: are PALCO lands going to be managed in the same way as before? My understanding is that in previous decades, PALCO was managed much less intensively than is being proposed in the current HCP. The plan acknowledges that a third of the population may be "taken" prior to implementation of a no-take strategy but then attempts to explain this problem away without providing any evidence that the worst-case estimate of "take" will be reached. Based on my previous arguments, I believe that "take" will probably be higher than the 33% estimated by PALCO. This seems to be an unprecedented level of "take" on a federally-listed threatened species. While the plan attempts to draw a similarity between itself and the conservation plan developed by Thomas et al. (1990), there are large dissimilarities. The Thomas plan truly attempted to devise a matrix of habitat as was defined at the time that plan was developed.

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However, PALCO developed no such matrix but discussed only amounts of discrete categories of spotted owl habitat. For example, none of the maps attached to the PALCO HCP showed the effects of habitat alterations on existing spotted owl sites. AF-18

CONCLUSIONS

I believe the Northern Spotted Owl Conservation Plan proposed in the Pacific Lumber Company Draft Sustained Yield Plan/Habitat Conservation Plan is unacceptable as an appropriate management strategy for northern spotted owls for three main reasons:

1) *There is inadequate use of existing scientific information* - I found the criteria for protecting and maintaining northern spotted owl habitat on Pacific Lumber Company Lands to be almost wholly unsubstantiated. A large body of work, especially on neighboring Simpson timber Company lands, was ignored in preparing the management strategies for this plan. Although this work was acknowledged, little of it was incorporated into management guidelines and specifications. In addition, hardly any of the research work on northern spotted owls that was conducted on Pacific Company timberlands was synthesized and integrated into this management plan. This in marked contrast to the Habitat Conservation Plan for northern spotted owls developed by Simpson Timber Company which synthesized and incorporated the body of research work conducted on their lands. I have reviewed a number of management plans for the northern spotted owl (e.g., Thomas et al. (1990), Simpson Timber Company HCP) and I found this plan to be the worst in terms of ignoring existing scientific information. I found almost no scientific credibility with respect to managing northern spotted owls in the proposed Habitat Conservation Plan for the Pacific Lumber Company. I believe my comments in the preceding sections of this document support this assertion. AF-19

2) *The proposed mitigation measures are inadequate* - The use of the 18-acre protection zones around northern spotted owl activity centers have no support in the existing scientific literature. Recent work on neighboring private and public lands (most of which was cited in the PALCO HCP) suggests that in terms of both reproduction and survival, considerably more protection is needed around existing nest and roost sites. In addition, there seem to be no assurances that more than 10% of the existing nesting habitat (as defined in this plan) will be maintained through the life of the plan. Much of the problem in formulating mitigation measures stems from poor definitions of habitat and ignoring the existing scientific literature on northern spotted owls in this region. AF-20

3) *The HCP lacks a well-designed monitoring program* - This plan should be considered unacceptable without a well-designed, carefully considered monitoring program. Such a program should include an appropriate sampling design, a AF-21

biologically relevant measure of population change, and an implementation strategy. None of these are currently in the plan. In plans such as the PALCO HCP, monitoring should be an integral part of the management strategy, and not an afterthought.

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RECOMMENDATIONS

I believe that timber harvesting and maintenance of spotted owl populations are to some degree compatible. To achieve this degree of compatibility requires adjusting current timber harvest practices with existing scientific knowledge. I also recognize that the primary goal of commercial timberlands is to produce timber and not to manage wildlife. However, I believe there is some middle ground where timber production and maintenance of wildlife populations can co-exist. The management plan for northern spotted owls proposed by Pacific Lumber Company does not reach this middle ground. In contrast, the HCP adopted for the northern spotted owl for Simpson Timber Company lands does a much better job of balancing timber production with the needs of wildlife populations. Although not perfect, it is a model which PALCO should strive for, or surpass, in re-designing their strategy for managing northern spotted owls on their lands. There are three main areas where the plan could be strengthened:

1) *Synthesis and analysis of existing scientific data* - There is a considerable amount of research information available on northern spotted owls that has been conducted on both public and private lands in northern California. Most of this information is available as peer-reviewed publications or in reports. As I pointed out previously, a good deal of this information was listed but not integrated with the management strategy for northern spotted owls proposed by PALCO. In addition, PALCO has conducted a good deal of research on northern spotted owls on their own lands. However, little of these data were incorporated into the plan. Incorporation of such data includes 1) synthesis of existing information and data relevant to the management strategy being proposed and 2) developing meaningful management guidelines which are supported by existing scientific knowledge. For example, the 18-acre protection zone around activity centers should have been supported by existing scientific data.

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2) *Incorporation of landscape habitat configurations* - The plan concentrated primarily on amounts of vegetation, habitat, etc. rather than configurations across the plan area. I would strongly suggest that other landscape characteristics, such as patch size and shape, be integrated into the management strategy for northern spotted owls. For example, timber harvesting activities could be allowed within northern spotted owl sites with certain restrictions based on existing biological knowledge on patch configurations of different vegetation types. However, these restrictions would need to have a more appropriate biological basis than those currently proposed in the Pacific Lumber Company HCP.

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3) *Incorporation of experiments into "take" and management strategies* - Timber harvesting will occur under this plan, regardless of the adopted management strategies. Thus, there are opportunities to expand Pacific Lumber Company's understanding of how northern spotted owls react to different timber harvesting regimes and cutting practices. I advocate the inclusion of well-designed, large-scale experiments into the HCP. Such experiments should examine the effects of timber harvesting on northern spotted owl populations. This "adaptive management" is often proposed in a general sense but rarely is it executed properly. In addition, such experiments can benefit the company by allowing timber harvesting to occur at some level and can benefit spotted owls if timber harvesting can be done such that spotted owl populations are maintained. However, these experiments must be well-designed and validly executed to provide reliable knowledge on how timber harvesting activities affect northern spotted owls.

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